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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,293	08/03/2001	David W. Clarke	02052-100001 / 00,012	5657

26171 7590 05/07/2004

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EXAMINER	
WEST, JEFFREY R	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/921,293	Applicant(s) CLARKE ET AL.
	Examiner Jeffrey R. West	Art Unit 2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,23,28,29 and 32-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *39 and 40* is/are allowed.

6)☒ Claim(s) *1-8,10-21,23,28,29,32-38,41 and 42* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2003* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/24/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The Information Disclosure Statement filed February 24, 2004, has been considered, however, the following references have not been considered for associated reasons:

Reference "AM" has not been considered because a copy of this reference has not been supplied to the Examiner.

Reference "BG" has not been considered because it appears to be a duplicate of reference "AN" without the attached appendix.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 8, 13, 21, 29, 34-36, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,463,612 to Thompson in view of U.S. Patent No. 6,466,069 to Rozenblit et al. and further in view of U.S. Patent No. 3,751,979 to Ims and U.S. Patent No. 6,236,278 to Olgaard.

Thompson discloses an electronic circuit using digital techniques for vortex shedding flowmeter signal processing comprising a vortex flow sensor (i.e. process variable transmitter) that produces a signal over a line, which varies with the vortex

shedding frequency, to a preamplifier, and then over an A.C. coupling to a phase detector (column 2, lines 63-66). Thompson discloses a phase lock loop (column 3, lines 1-4) comprising a phase detector that receives the input signal and produces an output signal to a low-pass loop filter that outputs a filtered signal to a voltage controlled oscillator that feeds-back a locking oscillator signal to the phase detector (Figure 1). Thompson also discloses including the components of the system on a single low-power digital signal processor chip used for use in a software process (column 3, lines 39-43 and 61-62). Thompson discloses including an amplitude detector (i.e. drop out detector) that senses the amplitude of the input signal and generates a low flow signal when it is below a predetermined level (column 2, lines 13-19).

Thompson, however, only discloses using one phase locked loop and therefore also fails to disclose a switching means for selectively connecting first or second phase lock loops based on bandwidth characteristics.

Rozenblit teaches a fast settling charge pump biasing circuit that varies the bias when a phase lock loop changes frequency to improve the settling time of the phase locked loop (abstract). Rozenblit specifies that the phase locked loop includes a phase detector, loop filter, and voltage controlled oscillator, wherein the voltage controlled oscillator feeds back the oscillator signal to the phase detector (Figure 1). Rozenblit also teaches changing the locking frequency of the phase locked loop between a narrow bandwidth, small natural frequency, to provide greater immunity to noise, and a larger bandwidth, large natural frequency, to provide faster locking

(column 7, line 54 to column 8, line 1). Rozenblit also teaches performing this frequency change based upon a determination that the phase locked loop is locked (column 4, lines 28-32).

Ims teaches a flow speed measurement system (column 1, lines 29-30) including two separate phase locked loops (column 16, lines 6-8) and a switch operable to switch between a first output of the first phase locked loop and a second output of the second phase locked loop (column 16, lines 26-29 and Figure 8) wherein the switching is controlled by a processors in response to a change in the frequency (column 6, lines 25-46 and column 16, lines 29-33).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson to include selecting between different bandwidth characteristics of a phase locked loop, as taught by Rozenblit, because Thompson teaches that vortex sensors are known to produce noise or fluctuating signals (column 1, lines 21-28) and Rozenblit suggests that the combination would have allowed optimization of the phase locked loop speed while reducing/providing immunity to noise and therefore providing an overall stable phase locked loop (column 8, line 1-19).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson and Rozenblit to include two phase locked loops rather than modifying one phase locked loop, as taught by Ims, because the combination would have provided a faster, simpler, method for switching between two different frequency phase locked loop responses and, as suggested by Ims, provided

increased efficiency since the two loop would be continuously driven in desired operation (column 16, lines 54-56).

As noted above, Thompson in combination with Rozenblit and Ims teaches many of the features of the claimed invention and while the combination does teach performing a frequency change between the PLLs based upon a determination that the phase locked loop is locked (Rozenblit, column 4, lines 28-32) the combination does not specify including lock indicator signals indicating when the phase locked loops are locked.

Olgaard teaches an apparatus and method for a fast locking phase locked loop comprising a control circuit that, in accordance with a lock signal, and reference and feedback signal frequency divider circuits, transitions between first and second circuit operation modes when the PLL lock signal indicates that the PLL has transitioned between unlocked and phase locked states of operation (column 5, lines 41-48).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, and Ims to include lock indicator signals indicating when the phase locked loops are locked, as taught by Olgaard, because Olgaard suggest that by providing a lock signal in a dual mode PLL circuit (column 5, lines 55-58), the combination would have quickly indicated that the PLL is locked and therefore allowed sooner processing, by implementing processing as soon as the signal is received (column 1, lines 20-26 and column 6, lines 11-22).

Further, since the invention of Thompson, Rozenblit, and Ims teaches switching between the first and second phase locked loops when it is determined that the loop is locked and Olgaard teaches generating a lock indicator signal when the loop is locked, the combination would have provided a method for switching between the two phase locked loops based upon the occurrence of the corresponding PLL lock indicator signal.

With respect to claim 29, it is considered to be well-known in the art, and admitted as prior art by Applicant, that low flow conditions produce a small output amplitude in a flow sensor (See instant specification, page 1, line 23 to page 2, line 4 and U.S. Patent No. 5,493,915 to Lew et al. column 5, lines 9-18). Therefore, as noted above, since the combination of Thompson, Rozenblit, and Ims teaches switching between a second phase locked loop with a narrow bandwidth, small natural frequency, to provide greater immunity to noise, and a first phase locked loop with a larger bandwidth, large natural frequency, to provide faster locking, it would have been obvious to one having ordinary skill in the art to switch, based upon reception of the low-flow amplitude detector, to the second phase locked loop when a low-flow condition occurs because the combination would have provided a more accurate result by using the PLL that is less likely to allow noise to interfere with the small amplitude signal.

Finally, although not specified, it would have been obvious to one having ordinary skill in the art to allow the user to have more control over the sensing process by specifying that the predetermined low-flow amplitude limit be user-controlled.

4. Claims 14-19 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Rozenblit, Ims, and Olgaard and further in view of U.S. Patent No. 5,576,497 to Vignos et al.

As noted above, Thompson in combination with Rozenblit, Ims, and Olgaard teaches all of the features of the claimed invention except for specifying that the vortex flow sensor sense pressure variations due to vortex shedding of a fluid in a passage, converting the pressure variations to a sinusoidal signal, or pre-filtering the signal processing.

Vignos teaches adaptive filtering for a vortex flowmeter including a well known vortex sensor that produces an analog sinusoidal signal representative of the alternating differential pressure various to calculate fluid flow or velocity (column 2, lines 44-49). Vignos also teaches an initial signal conditioner which filters the signal before subsequent processing occurs (column 2, lines 49-57).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, Ims, and Olgaard to include specifying that the vortex flow sensor sense pressure variations due to vortex shedding of a fluid in a passage and converting the pressure variations to a sinusoidal signal, as taught by Vignos, because Thompson in combination with Rozenblit, Ims, and Olgaard teaches the processing method, not the specifics of the sensor itself, and Vignos teaches the well known features of a vortex sensor.

Further, It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, Ims, and Olgaard to include pre-filtering the signal before processing, as taught by Vignos, because, as suggested by Vignos, the combination would have provided a method for conditioning the signal to obtain a desired bandwidth around the vortex frequency and therefore preserved a high signal-to-noise ratio which produces a more accurate flow measurement over a wider variety of flow conditions (column 2, lines 58-67).

5. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Rozenblit, Ims, and Olgaard and further in view of U.S. Patent No. 6,298,100 to Bouillet.

As noted above, Thompson in combination with Rozenblit, Ims, and Olgaard teaches all the features of the claimed invention except for specifying that the phase detectors comprise a heterodyning module and a Hilbert transformer.

Bouillet teaches a phase error estimation method for a demodulator comprising a phase locked loop with a pilot component as a reference and a conventional phase detector for phase acquisition, all part of a phase control loop (column 3, lines 13-17). Bouillet also teaches including a Hilbert filter for receiving the pilot signal, transforming the signal into in-phase and quadrature components, and applying the transformed components to the phase control loop (column 3, lines 31-46). Bouillet also teaches heterodyning the reference pilot with the carrier in the main path of the phase locked loop (column 4, lines 15-30).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, Ims, and Olgaard to include specifying that the phase detectors comprise a heterodyning module and a Hilbert transformer, as taught by Bouillet, because, as suggested by Bouillet, the combination would have reduced distortion errors by heterodyning the received spectrum of the phase locked loop down to a baseband (column 4, lines 15-22) as well as produced a phase control signal by correlating received sync values with a Hilbert transform of a reference sync value (column 3, lines 61-65).

6. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Rozenblit, Ims, and Olgaard and further in view of U.S. Patent No. 5,570,300 to Henry et al.

As noted above, Thompson in combination with Rozenblit, Ims, and Olgaard teaches all the features of the claimed invention except for specifying that the transmitter include a module for generating uncertainty parameters including a status variable.

Henry teaches self-validating sensors, using software (column 14, lines 40-41), that include a transducer for generating a data signal related to the value of a variable and a transmitter for receiving the data signal and generating output signals, wherein the transmitter generates a first output signal related to the value of the variable and a second output based on a dynamic uncertainty analysis of the first output signal (abstract). Henry also teaches that the uncertainty parameters include

a measurement status variable (column 2, lines 17-20) indicating quality (column 7, lines 60-63) based upon the varying frequency of the output signal (column 9, lines 14-27 and column 13, line 61 to column 14, line 22).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, Ims, and Olgaard to include specifying that the transmitter include a module for generating uncertainty parameters including a status variable, as taught by Henry, because, as suggested by Henry, the combination would have allowed the user of the sensors to obtain an accuracy measurement of the sensor data since sensors do not perfectly represent the value of a process variable obtained, and often includes effects, such as faults or distortion, resulting from the sensor itself (column 1, lines 20-26).

7. Claims 20 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Rozenblit, Ims, Olgaard, and Vignos and further in view of U.S. Patent No. 4,201,084 to Ito et al.

As noted above, Thompson in combination with Rozenblit, Ims, Olgaard, and Vignos teaches many of the features of the claimed invention including a prefilter, a low flow detector, and an implicit teaching that low flow conditions produce a small output amplitude in a flow sensor. The combination, however, does not specify that the prefilter is switched on based upon the low flow detection.

Ito teaches a vortex flow meter including a filter switchable between active and inactive states (column 2, lines 10-24) wherein the filter is active when a low flow condition exists (column 7, lines 12-21).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, Ims, Olgaard, and Vignos to include specifying that the prefilter is switched on based upon the low flow detection, as taught by Ito, because, as suggested by Ito, the combination would have provided a method for filtering to obtain a good signal-to-noise ratio when the amplitude of the flow signal is small thereby enabling better signal detection (column 2, lines 32-46 and column 7, lines 12-21).

8. Claims 32, 33, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,463,612 to Thompson in view of U.S. Patent No. 5,576,497 to Vignos et al. and further in view of U.S. Patent No. 5,570,300 to Henry et al.

Thompson discloses an electronic circuit using digital techniques for vortex shedding flowmeter signal processing comprising a vortex flow sensor (i.e. process variable transmitter) that produces a signal over a line, which varies with the vortex shedding frequency, to a preamplifier, and then over an A.C. coupling to a phase detector (column 2, lines 63-66). Thompson discloses a phase lock loop (column 3, lines 1-4) comprising a phase detector that receives the input signal and produces an output signal to a low-pass loop filter that outputs a filtered signal to a voltage

controlled oscillator that feeds-back a locking oscillator signal to the phase detector (Figure 1). Thompson also discloses including the components of the system on a single low-power digital signal processor chip used for use in a software process (column 3, lines 39-43 and 61-62). Thompson discloses including an amplitude detector (i.e. drop out detector) that senses the amplitude of the input signal and generates a low flow signal when it is below a predetermined level (column 2, lines 13-19).

As noted above, Thompson teaches many of the features of the claimed invention except for specifying that the vortex flow sensor sense pressure variations due to vortex shedding of a fluid in a passage and converting the pressure variations to a sinusoidal signal.

Vignos teaches adaptive filtering for a vortex flowmeter including a well known vortex sensor that produces an analog sinusoidal signal representative of, and having a similar frequency of, the input alternating differential pressure variations to calculate fluid flow or velocity (column 2, lines 44-49 and column 3, line 59 to column 4, line 2). Vignos also teaches an initial signal conditioner which filters the signal before subsequent processing occurs (column 2, lines 49-57).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson include specifying that the vortex flow sensor sense pressure variations due to vortex shedding of a fluid in a passage and converting the pressure variations to a sinusoidal signal, as taught by Vignos, because Thompson teaches

the processing method, not the specifics of the sensor itself, and Vignos teaches the well known features of a vortex sensor.

As noted above, the invention of Thompson and Vignos teaches all the features of the claimed invention except for specifying that the transmitter include a module for generating uncertainty parameters including a status variable.

Henry teaches self-validating sensors, using software (column 14, lines 40-41), that include a transducer for generating a data signal related to the value of a variable and a transmitter for receiving the data signal and generating output signals, wherein the transmitter generates a first output signal related to the value of the variable and a second output based on a dynamic uncertainty analysis of the first output signal (abstract) and self-validation that provides a best estimate of the value of a parameter being monitored based on all information available to the sensor (column 2, lines 10-14). Henry also teaches that the uncertainty parameters include a measurement status variable (column 2, lines 17-20) indicating quality (column 7, lines 60-63) based upon the varying frequency of the output signal (column 9, lines 14-27 and column 13, line 61 to column 14, line 22).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson and Vignos to include specifying that the transmitter include a module for generating uncertainty parameters including a status variable, as taught by Henry, because, as suggested by Henry, the combination would have allowed the user of the sensors to obtain an accuracy measurement of the sensor data since sensors do not perfectly represent the value of a process variable

obtained, and often includes effects, such as faults or distortion, resulting from the sensor itself (column 1, lines 20-26). Also, the invention of Henry teaches providing uncertainty and reliability of the best estimate as well as information about the operational status of the sensor (column 2, lines 17-20).

9. Claims 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson in view of Rozenblit, Ims, and Olgaard and further in view of U.S. Patent No. 5,128,625 to Yatsuzuka et al.

As noted above, Thompson in combination with Rozenblit, Ims, and Olgaard teaches all the features of the claimed invention except for providing the output signal of the first PLL to the second PLL as a center frequency of the second PLL.

Yatsuzuka teaches an adaptive phase lock loop system comprising two phase locked loops prepared so that the first PLL caries out on the initial training mode, and the second PLL performs the conventional process so that when the PLLs are initially or periodically initiated, the second PLL is activated with the initial phase and center frequency given by the first PLL after the initial training mode is performed (column 14, lines 14-20).

It would have been obvious to one having ordinary skill in the art to modify the invention of Thompson, Rozenblit, Ims, and Olgaard to provide the output signal of the first PLL to the second PLL as a center frequency of the second PLL, as taught by Yatsuzuka, because, as suggested by Yatsuzuka, the combination would have provided fast accurate results and lock-in by training to obtain optimal values for the

corresponding input signal, thereby insuring that when the second PLL is initiated an optimum center frequency is used (abstract).

Allowable Subject Matter

10. Claim 39 is considered to be allowable over the cited prior art because while the cited prior art does teach a switchable pre-filter the cited prior art does not indicate that this switchable pre-filter replaces the inputs to a PLL when it is on. Therefore, none of the cited prior art teaches or suggests, in combination with the other claimed limitations for a process variable transmitter, a pre-filter wherein, based on a status of the low-flow signal, a fixed center frequency of the second phase-locked loop switchable between an output signal of a first phase-locked loop, and $2\pi f_{ph}$, where f_{ph} is a high cut-off frequency of the pre-filter.

Claim 40 is considered to be allowable over the cited prior art because while the cited prior art does teach a self-validating module that includes status variables of CLEAR, BLURRED, DAZZLED, and BLIND, none of the cited prior art teaches or suggests, in combination with the other claimed limitations for a signal processing apparatus, specifying that the measurement status variable of the self-validating module be CLEAR when both lock indicator signals indicate lock, BLURRED when one of the two lock indicator signals indicates lock and the other of the two lock indicator signals indicates no lock, DAZZLED when both lock indicator signals indicate no lock, and BLIND when both lock indicator signals indicate no lock for at least a predetermined length of time.

11. Claim 9 is objected to as being depended on a rejected claim but would be allowable over the cited prior art if rewritten in independent form including all of the limitations of the base claim and any intervening claims for reasons similar to allowable claim 39.

Response to Arguments

12. Applicant's arguments with respect to claims 1-21, 23, 28, 29, and 32-42 have been considered but are moot in view of the new ground(s) of rejection.

The following arguments, however, are noted:

Applicant first argues that "there is no motivation to combine Rozenblit et al. with Thompson" but does not indicate why no motivation exists but instead explains that "Rozenblit et al. do not disclose or suggest switching the 'change bandwidth signal' after the frequency has started changing" and "Thompson would be unable to provide a signal to the PLL of Rozenblit et al. to indicate that a frequency change was about to occur."

First it is noted that in the proposed combination, the invention of Thompson is modified by the invention of Rozenblit.

Secondly, it is submitted that the teaching or switching between the outputs of two PLL's is taught by the invention of Ims and motivation exists to combine the invention of Rozenblit with the invention of Thompson because Thompson teaches that vortex sensors are known to produce noise or fluctuating signals (column 1,

lines 21-28) and modifying the invention of Thompson to include selecting between different bandwidth characteristics of a phase locked loop because Rozenblit suggests that the combination would have allowed optimization of the phase locked loop speed while reducing/providing immunity to noise and therefore providing an overall stable phase locked loop (column 8, line 1-19).

Applicant then argues that "even if Rozenblit et al. could be properly combined with Thompson, there would be no motivation to add Ims to such a combination" because "[t]he Office Action cites to column 16, lines 54-56 for support for the assertion that the combination of Thompson and Rozenblit et al would be more efficient if Ims were added" while "the increased efficiency arises because 'each phase locked loop 68 [in the two-PLL embodiment] operates continuously at one frequency,' whereas the single-PLL embodiment must 'allow the PLL 68 time to reacquire the upstream and downstream frequencies,' which are different, after switching between the two input signals. Such a gain in efficiency would not arise if two PLLs were used in Rozenblit et al. because Rozenblit et al. do not need to wait for the signal to be reacquired when switching between modes. Rather, Rozenblit et al. operate on a single input signal that remains in an acquired state as the PLL is switched between modes."

The Examiner asserts that in the invention of Rozenblit when the PLL is switched between modes, the PLL must change frequencies (column 6, lines 59-63) and therefore by having two separate PLLs, one operating at a first frequency and a

second operating at a second frequency wherein the PLLs are switched between, each PLL would be readily operable at one frequency thereby arriving at the increase in efficiency.

Applicant then argues that "[t]he Office Action also asserts the combination of Thompson and Rozenblit et al. would be 'faster' and 'simpler' if Ims were added, but the Office Action offers no citation to support this assertion" and further since "Rozenblit et al. teach that the PLL switches to the fast mode 'rapidly,' that 'the charge pump 104 can switch rapidly to the fast and the slow mode,' and that the 'switching speed can be adjusted' . . . [t]here is no support for the assertion that switching between PLLs, as in Ims, would be 'faster'."

The Examiner asserts that obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one having ordinary skill in the art would recognize that by providing two PLLs, each operating at a different bandwidths and providing a means for switching between the PLLs as needed, rather than providing one PLL that must be modified to operate at the needed bandwidth, would result in a faster, simpler operation.

Further, while the invention of Rozenblit does teach performing rapid switching, the switching is still dependent on the charging and discharging of a capacitor

(column 5, lines 35-40). Therefore, while this switching may be considered rapid, switching between two operating PLLs would only depend on the switching time, which would be faster than the capacitor charging/discharging.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent No. 5,152,174 to LaBudde teaches a mass flow rate sensor and method including dual phase-locked-loops.

U.S. Patent No. 5,710,720 to Algrain et al. teaches a phase lock loop based system and method including phase locked indicators.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Marc Hoff
MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

jrw
May 3, 2004